25342
S/020/61/138/006/018/019
B103/B215

54500

AUTHOR: Putseyko, Ye. K.

TITLE: Kinetics of photoconductivity of chlorophyll and pigments of green leaves

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 6, 1961, 1381-1384

TEXT: The author studied relaxation processes under the action of photocurrent in solid layers of: (1) crystalline (a + b) chlorophyll, (2) (a + b) methylchlorophyllide, and (3) pigments of green leaves of common nettle (Urtica dioica) and wild jasmine (Philadelphus coronarius) isolated from acetonic extract. (1) and (2) were prepared at the Botanicheskiy institut AN SSSR (Botanical Institute AS USSR) by D. I. Sapozhnikov, Professor, and I. A. Popova. Besides a- and b-chlorophyll, (2) and (3) also contain α-carotene, lutein, viola- and neoxanthin, and the lipoproteid fraction of destroyed chloroplasts. From concentrated chloroform or acetone solutions, the layers (0.01 to 1[illegible] thick) were deposited onto quartz plates sputtered with two comb-shaped platinum electrodes. 100 - 200 v were applied to the electrodes of the photoresistor.

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Kinetics of photoconductivity ...

The relaxation of the photoresistor was studied by the τ-meter method (N. A. Tolstoy, P. P. Feofilov, Ref. 3: UFN, 41, 44 (1950)) within the period of $5 \cdot 10^{-6}$ to 10^{-2} sec. Modulated, visible 100 cps light from a [illegible]-120 (SVDSh-120) mercury lamp with yellow light filter type [illegible]-12 (ZhS-12) and with an intensity of 10^{-3} to 10^{-5} watts/cm^2 was used for illumination. Ad (1): The author found that increase and decrease of the photocurrent take place within a long period of time (several micrcseconds to seconds and minutes). The curves of its increase and decrease are usually symmetrical. For the maximum value of the photocurrent, the inertness component is almost 80 %. Increase and decrease do not follow the exponential law. For evaluating the oscillograms taken, the author applied the method of linear and exponential scanning. The latter he used for identifying three exponents with (a) the small time constant $\tau_1^{dec} = 3 \cdot 10^{-5}$ sec, and (b) large constants $\tau_2^{dec} = 6 \cdot 10^{-3}$ sec, $\tau_3^{dec} = 1.7 \cdot 10^{-2}$ sec in the individual sections of the curve of decrease. The law of decrease was determined by a diagram for "instantaneous" and "partial"

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Kinetics of photoconductivity ...

relaxation periods. The author found that the decrease in the photocurrent between several microseconds and 10^{-3} sec follows the hyperbolic law $I_{dec} = I_0(1 + at)^{-1}$. This proves the existence of a bimolecular process in the recombination of charges. After removing the air, the inertness of the layers is rapidly reduced already at room temperature. In vacuo, the portion of the slow component of the decrease in photocurrent is 50% of the constant value. The inertness of the fast and slow component is thus reduced to 1/2 and less. In vacuo, the curves of increase show "instantaneous" discontinuities of the photocurrent. They are due to additional longer-lasting electron transitions of shallow crystal levels. The increase of the photocurrent is faster than its decrease. Ad (2): Curves of increase and decrease for both types of scanning had two different time constants. Ad (3): In contrast to (1) and (2), these pigments show shorter relaxation periods even when exposed to air. The relation between increase and decrease, and "instantaneous" discontinuities, are similar to case (1). In contrast to case (1), the photocurrent soon attains a constant value during 10^{-2} sec illumination. Like in case (1),

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Kinetics of photoconductivity ...

the decrease of the photocurrent between 10^{-5} and 10^{-3} sec can be approximatela defined by the sum of two hyperbolas with $\alpha_1 = 0.32$ and $\alpha_2 = 0.20$.

The author found that the low inertness of appearance and disappearance of electron vacancies (positive holes) in all three cases ((1), (2),and (3)) proves the existence of a primary process. A distinct dependence of relaxation of the photoconductivity of the above pigments on adsorbed vapors (quinone) and gases (air) indicates the electron capture of the excited molecule by traps existing in the pigment crystals. From case (3), the author concludes that the residual lipoproteids, to which carotinoids and chlorophyll are fixed, do not stop the shift of charges, but make this process less inert under the action of air. There are 4 figures and 6 references: 4 Soviet-bloc and 2 non-Soviet-bloc. The reference to English-language publications reads as follows: Ref.1: R. Nelson, J. Chem. Phys., 27, 864 (1957).

PRESENTED: December 26, 1960, by A. N. Terenin, Academician

SUBMITTED: December 12, 1960

Card4/4

S/181/62/004/003/031/045
B108/B104

AUTHORS: Kyl'nikov, V. S., and Putseyko, Ye. K.

TITLE: Effect of crystal structure on the optical and photoelectrical properties of phthalocyanine without metal

PERIODICAL: Fizika tverdogo tela, v. 4, no. 3, 1962, 772-779

TEXT: The spectra of absorption and photoeffect in the visible range as well as the sign of the photocarriers have been studied in metal-free phthalocyanine films and powders of both the alpha and beta crystallographic modifications. The films were prepared by vacuum sublimation of phthalocyanines prepared at the Ivanovskiy khimiko-tekhnologicheskiy institut (Ivanovo Institute of Chemical Technology) (Docent V. F. Borodkin is thanked for the preparations) and of "Agfa" Geliogen blau G powder. The alpha modification was obtained on mica backings at up to 150°C. This phase could be converted into the beta phase by heating to 300°C for 4 - 6 hr. The absorption spectra of the two modifications are shown in Fig. 2. In the case of a closer packing of molecules in the

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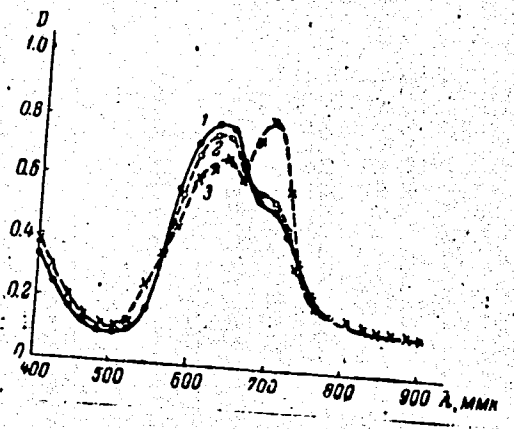
beta modification electron conductivity appears which is attributed to an overlapping of the intermolecular potential barriers. The alpha modification which has p-type conductivity only can interact with the surrounding gas or vapor. Consequently, its molecules produce sufficiently deep traps for conduction electrons. The quantum-yield maximum for a 50 mμ thick film of alpha phthalocyanine is in the range of the short-wave maximum of photo conductivity (~500 mμ). It is of the order of 10^{-3} - 10^{-4} electrons per quantum. Academician A. N. Terenin is thanked for discussions. There are 6 figures and 17 references: 10 Soviet and 7 non-Soviet. The four most recent references to English-language publications read as follows: G. Tollin, D. R. Kearns, M. Calvin. J. Chem. Phys., 32, 1013, 1960; D. R. Kearns, M. Calvin. J. Chem. Phys., 34, 2023, 1961; D. D. Eley. Research, 12, 293, 1959; K. Wihksne, A. E. Newkirk. J. Chem. Phys., 34, 2184, 1961.

ASSOCIATION: Gosudarstvennyy opticheskiy institut im. S. I. Vavilova, Leningrad (State Optical Institute imeni S. I. Vavilov, Leningrad)

Effect of crystal structure on the ... S/181/62/004/003/031/045
B108/B104

SUBMITTED: November 25, 1961

Fig. 2. Absorption spectra of metal-free phthalocyanine obtained at different temperatures of backing. Legend: (1) 20°C, (2) 150°C, (3) after 4 hr vacuum annealing at 300°C.



Card 3/3

S/181/62/004/006/025/051
B104/B112

AUTHORS: Akimov, I. A., and Putseyko, Ye. K.

TITLE: Determination of the spectra of photoelectric sensitivity of semiconductors by different methods

PERIODICAL: Fizika tverdogo tela, v. 4, no. 6, 1962, 1542 - 1548

TEXT: The spectral characteristics of the internal photoeffect of uncolored and colored TlI and ZnO semiconductors and of phthalocyanine were investigated by four different methods in the region of characteristic and sensitized sensitivity: (1) The photoconductivity was determined at constant voltage and under constant or intermittent illumination; (2) the longitudinal photo-emf in a capacitor with a semi-transparent electrode was determined: (3) the changes in contact potential and in the sign of the surface charge of the semiconductor were determined with a dynamic capacitor under constant illumination; (4) the photodielectric effect in a semiconductor layer was determined. The alternating signal of the photoeffect (150 or 600 cps) was measured with a resonance amplifier. A correlation between the absorption

Determination of the...

spectrum and the photo-emf was found for metal-free phthalocyanine in the visible and ultraviolet spectral regions. No overlap of the two spectra could be found in phthalocyanine layers of the same kind when different forms of α- and β-pigments were present in them. A correlation between the absorption spectra and the spectral curves of photoconductivity could be established only for thin layers of organic and inorganic semiconductors. Differences appear for thick layers: weakly absorbed light sets free photoelectrons far from the surface, while strongly absorbed light sets them free near the surface. The spectral curves obtained by the four different methods for the sensitized photoeffect of ZnO, AgI, and TlI colored with different pigments agree with one another and correspond to the absorption spectra of the adsorbed pigments. The spectral curves of photoconductivity of AgI and TlI, obtained by various methods in the region of self-absorption of the semiconductors, do not agree with another. As in the case of phthalocyanine, the maxima of photoconductivity obtained by measurements of the photodielectric effect, the photocurrent, the photo-emf, and the contact potential are shifted to the short-wave side of the spectrum. There are 6 figures.

Card 2/3

Determination of the.. .

S/181/62/004/006/025/051
B104/B112

ASSOCIATION: Gosudarstvennyy opticheskiy institut im. S. I. Vavilova Leningrad (State Optical Institute imeni S. I. Vavilov, Leningrad)

SUBMITTED: January 27, 1962

Card 3/3

MARKEVICH, N.N.; PUTSEYKO, Ye.K.

Optical sensitization of the photo effect of zinc oxide and the adsorption isotherms of dyes. Zhur. fiz. khim. 36 no.11:2393-2399 N'62. (MIRA 17:5)

S/181/63/005/004/036/047
B102/B186

AUTHORS: Markevich, N. N., and Putseyko, Ye. K.

TITLE: Effect of binders on the kinetics of zinc oxide photoconductivity

PERIODICAL: Fizika tverdogo tela, v. 5, no. 4, 1963, 1189 - 1193

TEXT: The kinetics of photocurrent increase and decrease in microcrystalline ZnO films (10 - 50μ) was studied in air, in high vacuum and also in the presence of a high-molecular binder. The film investigated were produced from pure ZnO powder (brands M-1 and Kahlbaum) and ZnO obtained by burning pure zinc in air and by decomposition of zinc carbonate at 600 - 650°C. The films were deposited as ethanol suspensions on glass or quartz plates provided with Pt contacts. Polyvinylbutyral, polyvinylacetate, polyvinylacetate-methylmethacrylate copolymer, vynalite, and others were used as binders. Photoconduction relaxation was measured with a taumeter (time interval $5 \cdot 10^{-6}$ - 10^{-2} sec). The samples were irradiated with monochromatic modulated (100 cps) light from a Hg-lamp filtered with an SvS-2 (UFS-2) filter, at intensities of 10^{-3} - 10^{-4} w/cm^2. The results obtained speak in

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favor of a bimolecular-recombination mechanism of ZnO photoconduction. The small inertia of the processes in the first stages of current increase and decrease, which is independent of the surrounding gases or vapors, indicated that UV illumination induces primary electron processes in the ZnO layers. The distinct dependence of photoconduction relaxation on the adsorbed gases and vapors with electron-acceptor properties indicates the production of electron adhesion levels on the surface of this semiconductor. From the sharp decrease of photocurrent inertia in the presence of insulating binders it is concluded that the binder molecules do not only not hinder the electron displacement in the conduction band but reduce inertia what is of great interest for electrophotography. There are 3 figures.

ASSOCIATION: Gosudarstvennyy opticheskiy institut im. S. I. Vavilova Leningrad (State Optical Institute imeni S. I. Vavilov, Leningrad)

SUBMITTED: July 17, 1962 (initially)
December 4, 1962 (after revision)

PUTSEYKO, Ye. K.

AID Nr. 977-12 27 May

PHOTOCONDUCTIVITY OF ACETYLENE POLYMERS (USSR)

Myl'nikov, V. S., Ye. K. Putseyko, and A. N. Terenin. IN: Akademiya nauk SSSR. Doklady, v. 149, no. 4, Apr 1963, 897-900.

S/020/63/149/004/020/025

The study of photoconduction in polyacetylenes as exemplified by poly(4, 4'-diethynylazobenzene) (I) has been continued. The spectral curves of 1) transverse photoconductivity (i_{ph}/w), 2) diffusion photo-emf (V_{ph}/w) (both reduced to equal incident energy), and 3) light absorption ($1 - R_\lambda$) were recorded at 17° C (see figure). In the first case the d-c method under constant illumination was used. The test specimens consisted of thin films of I deposited from dimethylformamide onto a quartz plate with Pt electrodes; the voltage across the electrodes was 100 to 200 v. In the second case the condenser method and powder specimens were used. A mercury-vapor lamp was employed for illumination with integral light since incandescent-lamp illumination had only slight effect on photoconductivity. The effect of ultraviolet illumination on the spectra is shown

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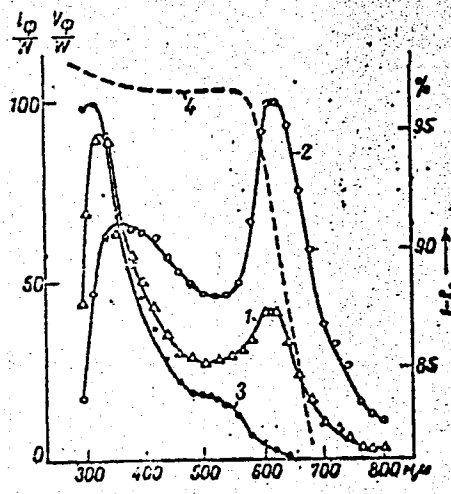
AID Nr. 977-12 27 May

PHOTOCONDUCTIVITY [Cont'd] S/020/63/149/004/020/025

in the figure. Curves 1 and 4 indicate conductivity and absorption without prior illumination; curves 2 and 3 show conductivity and emf after UV illumination for 10 min. The fact that conductivity shows a peak at 610 mμ, while the emf peak is barely noticeable at 500 mμ, is explained by the correspondence of the conductivity to the absorption drop. Such correspondence is typical of photoconductors. The UV-induced rise in conductivity at 610 mμ is attributed to the formation of electron trapping centers in I, which was previously shown to exhibit p-type conductivity. The UV-induced shift of the 300 mμ-peak to 310 mμ is ascribed to further the photopolymerization caused by the rise in conductivity. The detection of light-induced



Card 2/3

AID Nr. 977-12 27 May

PHOTOCONDUCTIVITY [Cont'd] S/020/63/149/004/020/025

EPR signals in I confirmed the presence of the centers. The photoconductivity mechanism is assumed to be similar to that in organic dyes. Compound I was synthesized at the Institute of Organoelemental Compounds, Academy of Sciences USSR, and made available for study by V. V. Korshak and A. M. Sladkov. The optical activation energy of conduction for I was calculated to be 1.82 ± 0.02 ev.

[SVM]

Card 3/3

TERENIN, A N., akademik; PUTSEYKO, Ye.K.; AKIMOV, I.A.; MESHKOV, A.M.

Influence of the form of aggregation of dyes on the sign of photocurrent carriers. Dokl. AN SSSR 155 no. 4:900-903 Ap '64.
(MIRA 17:5)

PUTSHIN, V. A.

T. I. Yurshenko, V. A. Putshin and K. S. Grigoryeva

"The Initiating Action of Tertiary Hydroperoxides and Their Influence on the Polymerization Rate." Reports Academy of Sciences, USSR, 75, 574-550, December 1950, Lvov, Polytechnic Institute

ABSTRACT AVAILABLE

D-50054

Equipment for the Dehydration of Zinc Chloride. G. G. Putshkin and M. Ya. Telis (*Liteinoe Delo*, [illegible], (8), 30-31).—[In Russian]. Descriptive. —S. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PUTSIKIN, G. G.

Panchenko, Yo. V., Kramer, B. I. , and Putsikin, G. G. - "The stability of molds for die casting under pressure", Sbornik (Mosk. in-t stali im Stalina), 27, 1949, p. 113-25.

SO: U-3042, 11 March 53, (Letopis 'Zhurnal 'nykh Statey, No. 8, 1949).

PUTSILLO, M. V. Cand Med Sci -- (diss) "The conductive tracts between the optic thalamus and the frontal lobe." Mos, 1958. 14 pp (Acad Med Sci USSR), 200 copies (KL, 52-58, 108)

PUTSILLO, M.V.

BLINKOV, S. M.; ERAZOVSKAYA, F. A.; PUTSILLO, M. V.

Correlation of cytoarchitectonics of cerebral cortex and distribution of conductors. Vopr. neirokhir. 15 no. 4:16-23 July-Aug 1951. (CLML 21:3)

1. Of the Institute of Neurosurgery imeni Academician N. N. Burdenko (Director — Corresponding Member of the Academy of Medical Sciences USSR Prof. B. G. Yegorov), of the Academy of Medical Sciences USSR.

ARUTYUNOVA, A.S.; BLINKOV, S.M., prof.; FUTSILLO, M.V.

Density of capillary network in the formations of the dog brain. Arkh. anat., gist. i embr. 49 no.8:28-35 Ag '65.
(MIRA 18:9)

1. Laboratoriya neyrokhirurgicheskoy anatomii (zav.- prof. S.M. Blinkov) Nauchno-issledovatel'skogo ordena Trudovogo Krasnogo Znameni instituta neyrokhirurgii imeni akademika N.N. Burdenko AMN SSSR, Moskva.

PUTSILLO, M.V.

Connections between the frontal area with the visual center in man. Vopr. neirokhir. 17 no.3:37-43 May-June 1953. (CIML 25:1)

1. Of the Architectonics Room (Head -- Prof. S. M. Blinkov), Institute of Neurosurgery imeni Academician N. N. Burdenko (Director -- Prof. B. G. Yegorov, Corresponding Member AMS USSR), Academy of Medical Sciences USSR.

PUTSILLO, M.V.

BLINKOV, S.M.; PUTSILLO, M.V.

Ansa peduncularis in man. Vop. neirokhir. 18 no.4:48-54 Jl-Ag '54.
(MLRA 7:10)

1. Iz Instituta neyrokhirurgii imeni akademika N.N.Burdenko Akademii meditsinskikh nauk SSSR.
(BRAIN, anastomy and histology,
*ansa peduncularis)

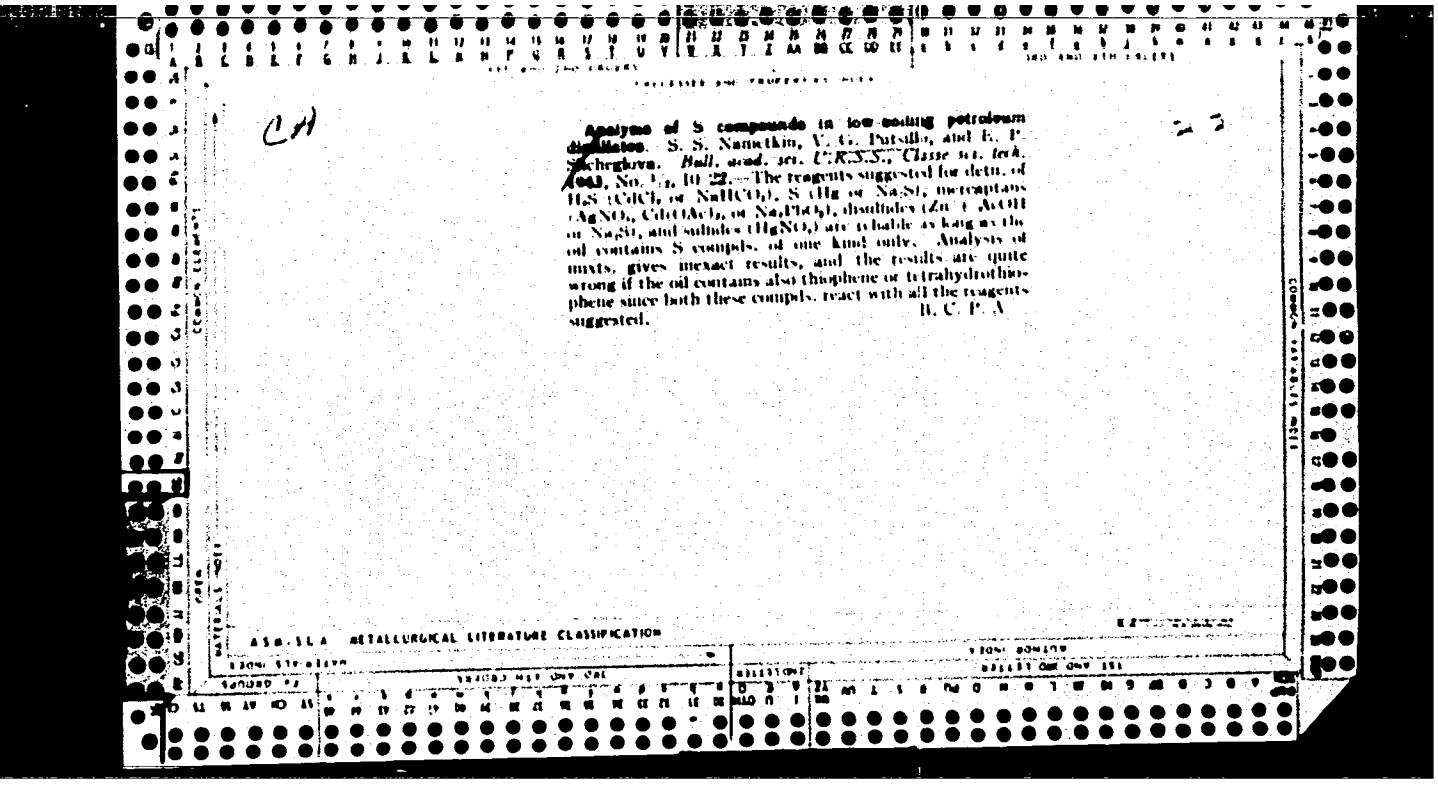
CA

21

PROCESSES AND PROPERTIES INDEX

Barzass coal. G. L. Stadnikov, V. G. Putsillo and L. N. Bakushinskaya. *Bull. acad. sci. U. R. S. S., Classe sci. math. nat., Ser. chim.* **1936**, 307-(in). cf. C. A. **30**, 7817[a].
John Livak

A S M - S L A METALLURGICAL LITERATURE CLASSIFICATION



CH

Analysis of S compounds in low-boiling petroleum distillates. S. S. Nametkin, V. G. Putsilin, and E. P. Shchegleva. *Bull. acad. sci. U.R.S.S., Classe sci. tech.*, 1943, No. 1-2, 10-22.—The reagents suggested for detn. of H_2S ($CdCl_2$ or $NaH(CO_3)$), S (Hg or Na_2S), mercaptans ($AgNO_3$, $Cd(OAc)_2$, or Na_2PbO_2), disulfides (Zn + AcOH or Na_2S), and sulfides ($HgNO_3$) are reliable as long as the oil contains S compds. of one kind only. Analysis of mixts. gives inexact results, and the results are quite wrong if the oil contains also thiophene or tetrahydrothiophene since both these compds. react with all the reagents suggested. B. C. P. A

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

SAHIN, I. P.
and
PUTSILLO, V. G.

Laboratory of Petroleum Chemistry, Institute of Mineral Fuels, Academy of Sciences, USSR. (-1944-)

"Analysis of Putilov Asphaltite" Iz. Ak. Nauk. SSSR. Otdel. Tekh. Nauk. Nos. 10-11, 1944.

BR-52059019

CA

22

Coals and bitumens of the Baikal deposits. V. G. Putsillo. *Trudy Inst. Nefti, Akad. Nauk S.S.S.R.* 7, 61–70 (1960).—The compn. was studied of petroleum in the locality and its generic relation was established with other bitumens found in that neighborhood. Studies were made on petroleum collected on the lake's surface, petroleum taken from a hole drilled through ice, ozokerite from a 7-m. deep test hole, tertiary brown coal, and bituminous sand interlaying these coals. The Baikal petroleum (I) is of asphaltic base, sp. gr. 0.967, Engler viscosity (at 100°) 5.27, and I contains 21.0% of silica gel tars and 7.8% asphaltenes. I contains 71.2% of oil, 1.2% paraffin, 0.33% S, and has an acid no. of 0.59. Upon fractionation, I yields 14% naphtha-gas-oil, 40% oil, and 46% residual asphalt. The analyses of the samples are given. The sample taken from the lake's surface was of petroleum type. It was identical with the specimen taken from the hole drilled through ice. Judging from the content of the paraffinic hydrocarbons the ozokerite is not directly related to other caustobiolites of that region.

M. Hoseh

1952

CA

8

Bitumens and bituminous minerals of Cambrian deposits. P. I. Sanin, V. G. Putsillo, and S. P. Uspenskii. *Trudy Yakut. Nefti. Aktad. Nauk S.S.S.R.* 1, No. 2, 71-98(1950).—The presented material is an analysis of the chem. results assembled in an investigation of bitumens in the Yakut A.S.S.R. Twenty-four tables of chem. analyses are given. M. Hnath

1952

PUTSILLO, V. G.

Examination of resins of ozocerite from the Borislav deposit. V. G. Putsillo and M. A. Kazarnovskaya. *Trudy Inst. Nefti, Akad. Nauk S.S.S.R.* 1, No. 2, 189–92(1950). —The ozocerite in this deposit occurs either disseminated in beds in intimate contact with the rock, in a concn. of about 3%, or in veins from a few cm. to 2 m. thick. The veins are of a fibrous structure, and almost free from mineral matter. A comparison in their compn. leads to conclusions regarding the catalytic effects of the component minerals on the resinification of ozocerite, which promotes oxidative polymerization of the wax. The two samples differ chemically in the much higher O + N content, acid no. and sapon. number in the disseminated ozocerite.

W. M. Sternberg

PUTSILLO, V. G.

Examination of resins in Dagadzhik ozocerite. V. G. Putsillo and M. A. Kazarnovskaya. *Trudy Inst. [illegible] Akademii Nauk S.S.S.R.* 1, No. 2, 193-6(1950).—The deposit is located on the Chelenek Island in the Caspian Sea, and the ozocerite content varies between 0.5 and 8%. The rock is a sandstone with about 14% carbonates. Eighty-seven % of the ozocerite is petr. ether-sol., and its resins are little polymerized, since 42% of the bitumen is ether-sol., and only 5% benzene- and chloroform-sol. The bitumen is strongly oxidized, with the formation of satd. acids from paraffin hydrocarbons, and acids with one double bond.
W. M. Sternberg

PUTSILLO, V.G.

Investigation of the bitumens of the Kizelovsk region. Pamyati Akad. I.M. Gubkina '51, 161-7. (MLRA 4:12)
(CA 47 no.22:12151 '53)

PUTSILLO, V. G., USPENSKIY, S. P. and SANIN, P. I.

"Bitumens and bituminous rocks of the Cambrain Deposits," Tr. In-ta nefti [Proceedings of the petroleum Institute], Vol. 1, Section 2, 1951.

PUTSILLO, V.G.

SANIN, P.I.; PUTSILLO, V.G.

Admixtures lowering the solidification point of greases. Trudy Inst.nefti no.6:116-127 '55. (MLRA 8:12)
(Lubrication and lubricants--Cold weather conditions)

Translation JJ50424

Putsillo, V. G.

20-3-34/52

AUTHORS: Putsillo, V. G., and Mironov, S. I., Academician.

TITLE: Possible Occurrence of Oil-Producing Rocks in the Fresh-Water Depressions of the Region Near the Lake Baikal (O vozmozhnoy neftepoizvodyashchey porode presnovodnykh vpadin Pribaykal'ya).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 3, pp. 479 - 482 (USSR).

ABSTRACT: Since a long time the Lake Baikal is known by its natural gas- and mineral oil ascents from the earth. Hitherto, it did not succeed to clear up the question on the connection between these sources and the rocks. Similar sources were ascertained in the depressions between the mountains in the Baikal district and in Mongolia. These symptoms show a regional character of the mineral oil formation, the fact of which is an advantageous supposition for mineral oil beds. By means of deep boring also a minable mineral oil field was found in the Dzunbain-depression (mongolia). However, no clear picture of the rock magma of the mineral oil found here, could be obtained. In the Dzunbain-mineral oil bearing suites were ascertained: 1.) Tsagantsab suite, lying on a crystalline massif, and 2.) Dzunbain suite, separated from the below-lying suite by bituminous slate. The rocks of both suites do not differ from those ones of other depressions, where they are characterized by fresh water- and

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Possible Occurrence of Oil-Producing Rocks in the Fresh-Water Depressions of the Region Near the Lake Baikal.

brackish water fauna. In order to characterize in a convincing manner the basin in which the two mentioned suites have formed, the rocks were analyzed chemically. It appeared that the loamy rocks have formed in the fresh water, which contained a maximum quantity of calcium salts. Table 1 and 2, giving the results of the analyses, unequivocally show, that the asphalt-like and resinous components represent the principle component of the slate-bitumen. The bitumen of the Dzunbain slates has an asphalt base with a distinct mineral oil nature. During the comparing study of the bitumen- and mineral oil components from Dzunbain it is striking above all, that in mineral oil the oil fraction is double as high as in bitumen (table 2, 3). With regard to the refraction coefficient of the oils isolated from the mineral oil (1,4895) it could be concluded, that they possess a much higher content of paraffinic-naphtene compounds, than the oils of the slate-bitumen (1,5090). The aromatic compounds, having a high absorptive power could have been accumulated in the bitumen of the rocks during the migration of the mineral oil from the Dzunbain suite into the commutator. Therewith the distribution of the components within the mineral oil and in the bitumen in no way contradicts the possibility of a genetic connection between them. However, the fresh water origin of these rocks may give occasion

Possible Occurrence of Oil-Producing Rocks in the Fresh-Water Depressions of the Region Near the Lake Baikal.

to a contradiction to the above thesis. However, if a possible mineral oil formation under not marine conditions will be taken into consideration, the Dzunbain suite may be appreciated as mineral oil producing. This hypothesis, however, needs further investigations. If it is assumed, that the bituminous slates of the Dzunbain suite form the rock magma of that mineral oil, the assumption is not improbable, that the source of the Baikal mineral oil may be searched in analogous slates.
There are 4 tables.

ASSOCIATION: Petroleum Institute AN USSR (Institut nefti Akademii nauk SSSR).

PRESENTED: September 18, 1957.

AVAILABLE: Library of Congress.

Card 3/3

S/103/63/024/002/007/020
D201/D308

AUTHORS: Bobrov, Yu.I., Kornilov, R.V. and Putsillo, V.P. (Moscow)

TITLE: Determination of the control law of an optimizer, taking into account the inertness of the object

PERIODICAL: Avtomatika i telemekhanika, v. 24, no. 2, 1963, 183-191

TEXT: The authors analyze the on-off extremum control systems, in which the controlled object is represented by a first order factor, a non-linear element with one extremum and has an inactive zone. From the analysis of the system's motion in the phase plane the structure of the optimizer controller is derived and it is shown that, for the above class of systems, a stable search for optimum is achieved by introducing the second derivative: this is done bearing in mind that, for objects with an inactive zone and low speed of the output stage, the signal from the second derivative may be commensurable with the inactive zone. The synthesis of the con-

trol law was used for selecting the functional diagram of the optimizer. The first derivative signal is differentiated and a signal, proportional to the second derivative, is applied to the summing element, to which the compensating constant signal is also applied. If the output from the summing element is less than - ε, where ε is the inactive zone of the relay, a signal is applied to a logic circuit, which then transmits a pulse from the timing generator. This output is then applied to a trigger circuit, which reverses the direction of the output stage. A model of the device, with polarized relays as sensing elements, operated in full agreement with the theory. There are 7 figures.

SUBMITTED: March 27, 1962

PUCILLO, V.P. [Putsillo, V.P.] (Moskva); ALEKPEROV, M.P. (Moskva); STRACHOV, V.P. [Strakhov, V.P.] (Moskva)

Use of computers for automatic control of soaking furnaces. Hut listy 17 no.5:333-338 My '62.

BOBROV, Yu.I. (Moskva); KORNILOV, R.V. (Moskva); PUTSILLO, V.P. (Moskva)

Determination of the control law of an optimizer taking into account inertial characteristics of the objects. Avtom.i telem. 24 no.2:183-192 F '63. (MIRA 16:1)
(Automatic control)

PUTSILLO, V.P. (Moskva); STRAKHOV, V.P. (Moskva); FEYGIN, L.I. (Moskva)

Use of a nonlinear programing method for solving a problem on the optimum transportation of metal to a blooming mill. Avtom.i telem. 23 no.8:1067-1077 Ag '62. (MIRA 15:7)
(Rolling (Metalwork)) (Automatic control)

S/569/61/006/000/003/008
D201/D303

AUTHORS: Putsillo, V. P., Petrov, V. V., Kornilov, R. V. and Volodin, Ye. Ye. (USSR)

TITLE: Principles of design of one class of extremum control systems for the automation of production processes

SOURCE: International Federation of Automatic Control. 1st Congress, Moscow, 1960. Trudy. v. 6. Avtomatizatsiya proisvodstvennykh protsessov; khimiya, neftepererabotka, teploenergetika, yadernaya energetika, metallurgiya. Moscow, 1961, 356-366

TEXT: The authors describe an extremum control system designed for controlling processes with large time constants in the linear sections. This extremum control system is the easiest to design and is based on the method of forced reversals or hunting with "memorizing" the extremum. When the controller is switched in, the controlling element starts to move in any direction, thus producing changes in the controlled quantity y. The controlling signal is ac-

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Principles of design ...

tually the sign of a finite increment: $\Delta = \text{sign}\,(y_i - y_{i-1})$. If the maximum is sought, then at $\Delta > 0$ the motion is allowed for, but at $\Delta < 0$ the drive of the controlling element is reversed. The block-diagram of an extremum controller is given. It has the following main units: 1) Input unit (IU), which determines the sign of the increment of controlled quantity by comparing its current magnitudes with those previously stored; 2) commutator unit, providing the forced reversal of the system, excluding the consecutive signals of one sign and controlling the IU; 3) output unit (OU) for producing a signal with enough power for controlling the drive of the controller; 4) the switching-off unit (SO) which disconnects the controller when extremum is reached and makes a reversed connection, if no disturbance changing the position of extremum is acting upon the system; 5) control velocity regulator (CVR) providing a wide range of regulation of the motor (output stage) velocity. The circuit diagram of the arrangement is given. The controller has been experimentally tried with a high-temperature tunnel furnace. The controller made it possible to control the fur-

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Principles of design ...

nace temperature within 3 - 4°C (nominal operating temperature was 1600 - 1650°C). The maximum deviation during the transitional unstable state did not exceed 9 - 12°C. At the same time the air consumption was down by 20%. The results obtained were in agreement with the requirements. V. V. Petrov (USSR) took part in the discussion and acknowledges the help of Professor V. V. Kazakevich and of Engineer A. L. Malyy in designing the first model of the extremum control of the tunnel furnace. There are 5 figures and 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: C. S. Draper, L i J. T. Principles of optimalizing control, ASME, 1951.

Card 3/3

L 46030-66 EWT(d)/EWT(v)/EWP(k)/EWP(h)/EWP(1) GD/BC

ACC NR: AT6017618 (N) SOURCE CODE: UR/0000/65/000/000/0265/0277

37
B+1

AUTHOR: Putsillo, V. P.; Bobrov, Yu. I.; Kornilov, R. V.

ORG: none

TITLE: Methods of constructing single channel automatic optimizers for inertial processes

SOURCE: Vsesoyuznaya konferentsiya po teorii i praktike samonastraivayushchikhsya sistem. 1st, 1963. Samonastraivayushchiyesya sistemy (Adaptive control systems); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 265-277

TOPIC TAGS: optimization, optimal control, extremal control, NONLINEAR CONTROL SYSTEM

ABSTRACT: Two methods of synthesizing a controller for a nonlinear, inertial, extremal control system are presented. The synthesis is performed by analyzing the output of the system by a phase plane diagram. The first method establishes the control law by evaluating the first order derivative of the output, while the second method utilizes the second order derivative as well. The second method is supposed to improve the stability of the system. The control law is expressed as a logical binary algorithm and schemes composed of logical elements to perform the control functions are proposed. The second method proposed by the authors is criticized by V. V. Kazakevich, whose work is referred to in this paper. His conclusion is that the perform-

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ACC NR: AT6017618

ance of the second method is dubious due to several oversights of the authors. Orig. art. has: 12 formulas, 7 figures, 2 tables.

SUB CODE: 13/ SUBM DATE: 22Nov65/ ORIG REF: 003

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81399
S/020/60/132/06/20/068
B014/B007

5.4500

AUTHOR: Putseyko, Ye. K.

TITLE: The Photoconductivity Kinetics of Phthalocyanines

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 6, pp. 1299 - 1302

TEXT: The special interest displayed in phthalocyanine is explained in the introduction by its close affinity to chlorophyll and hemin. In the present paper the initial stages of relaxation processes of the photoconductivity of phthalocyanines were investigated. The investigations were carried out on phthalocyanine layers which had been sublimated in a high vacuum. Some of them contained copper and magnesium, others contained no metals. The apparatus is shortly described. Relaxation times could be observed within the range of from $5 \cdot 10^{-6}$ to 10^{-2} seconds. Details of the device are dealt with. The investigations showed that the processes of increase and decrease of the photocurrent took place in the case of all phthalocyanines within the time interval of from 10^{-5} to 10^{-2} seconds.

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81399

The Photoconductivity Kinetics of Phthalocyanines S/020/60/132/06/20/068
B014/B007

Oscilloscopes and a diagram of these processes are shown in Figs. 1-3. Investigation of the influences exerted by various factors showed that heating of phthalocyanine without metal up to + 100°C exerted no influence upon the character of relaxation processes either in air or in a vacuum. Also the presence of oxygen or water vapor showed no influence. An investigation of the increase- and decrease curves showed that two components with a shorter and a longer proper time, respectively, exist. It is further pointed out that the relaxation time of the photocurrent varies considerably with the intensity of illumination. Analysis of the investigation carried out shows that short-time photoelectric processes of 10^{-5} seconds duration in solid layers of phthalocyanine without doubt provide convincing proof of the electronic nature of the effects observed. The decrease of photoconductivity has recombination character. A. T. Vartanyan and I. A. Karpovich are mentioned. There are 4 figures and 11 references: 6 Soviet, 1 American, 1 German, and 1 French.

PRESENTED: February 1, 1960, by A. N. Terenin, Academician

SUBMITTED: January 25, 1960

Card 2/2

PHASE I BOOK EXPLOITATION SOV/...57

Moscow. Dom nauchno-tekhnicheskoy propagandy imeni F. E. Dzerzhinskogo

Vysokoproizvoditel'naya tekhnologicheskaya osnastka (High-Productivity Auxiliary Processing Equipment) Moscow, Mashgiz, 1960. 174 p. 8,000 copies printed.

Sponsoring Agency: Obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy RSFSR.

Ed. (title page): V. V. Kuz'min; Ed. (inside book): S. L. Martens; Tech. Ed.: L. P. Gordeyeva; Managing Ed. for Literature on Metal-working and Machine-Tool Construction (Mashgiz): V. V. Rzhavinskiy, Engineer.

PURPOSE: This collection of articles is intended for technical personnel engaged in the development of auxiliary equipment for metal processing.

COVERAGE: This collection contains articles dealing with modern machine-tool auxiliary equipment, methods of manufacture, and data on the introduction of such equipment into production. The engineering and economic aspects of the use of standardized auxiliary equipment are also discussed. No personalities are mentioned. References follow each article.

(13)

PUTSILLO, VERA GEORGIYEVNA

9N/5
735
.P9

Nefti i bitumy Sibiri Oil and coal in Siberia, by V. G. Putsillo, I. S. I. Mironov. Moskva, Izd-vo Akademii Nauk SSSR, 1958.
245 p. diagrs., graphs, tables.
At head of title: Akademiya Nauk SSSR. Institut Nefti.
Includes references.

AUTHORS: Mironov, S. I., Member, Academy of Sciences, SOV/20-122-2-33/72
USSR, Putsillo, V. G., Vorob'yeva, S. I.

TITLE: The Asphalt-Like Bitumen of the Upper Reaches of the Markha River in Yakutiya (Asfal'topodobnyy bitum verkhov'ya r. Markhi v Yakutii)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 2, pp 264 - 265 (USSR)

ABSTRACT: At the mouth of the Sytykan River, a tributary of the Daladan River, a bituminous mass has been discovered. It is nearly black, viscous and is uniformly mixed with limestone; it occurs at the Silurian-Cambrian contact. By extraction first with acetone, then with benzene, oil, silicagel-resin and asphalt were isolated. Sixty-six and one-tenth percent of the rock is organic material. Of this 46.77% could be extracted with acetone and 53.23% with benzene. The results of the analysis are given in table 1. The table indicates that the easily dissolved petroleum-like bitumen of the sample is almost entirely composed of asphalt and resin (70.04% of the bitumen) while the oil content of the intermediate fraction does

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not exceed 29.96%. The bitumen itself has a high sulfur content. The oil of the bitumen is composed of petroleum hydrocarbons with impurities of sulfur compounds as well as oxygen and nitrogen containing compounds. The composition of the silicagel-resin and the resin not dissolved in acetone corresponds to the petroleum resins of the same nature. Possibly a significant part of the resin was produced by weathering as the sample was taken from an exposed outcrop. The same reason may account for the presence of oxygen compounds in the oil and intermediate fractions. The investigation shows that the bitumen is a strongly oxidized and polymerized petroleum bitumen. A comparison with the composition of bitumen from the upper part of the middle Cambrian of the Amga River region shows that both bitumens exhibit a high asphalt content. Thus, the assumption is made that both bitumens come from the same source material and that conditions for their transformation at both locales were similar. All this testifies to the widespread favorable conditions for petroleum formation in the region of the Siberian Platform

The Asphalt-Like Bitumen of the Upper Reaches of the Markha River in Yakutiya SOV/2o-122-2-33/42

and for the migration of middle Cambrian petroleum to the contact between upper Cambrian sedimentary rocks and Silurian rocks. There are 2 tables and 1 reference, 1 of which is Soviet.

ASSOCIATION: Institut nefti Akademii nauk SSSR (Petroleum Institute, AS USSR)

SUBMITTED: June 7, 1958

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PHASE I BOOK EXPLOITATION 1022

Putsillo, Vera Geogriyevna, Sokolova, Mariya Nikolayevna, Mironov, Stepan Il'ich

Nefti i bitumy Sibiri (Oils and Bitumens of Siberia) Moscow, Izd-vo AN SSSR, 1958. 245 p. 2,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut nefti

Resp. Ed.: Mironov, S. I., Academician; Ed. of Publishing House: Shobolov, S. P.; Tech. Ed.: Kashina, P. S.

PURPOSE: This book is for geologists and oil exploration specialists.

COVERAGE: The present monograph, a collection of 8 articles by three authors, describes the occurence, chemical composition, and genesis of the bitumens and oils of Siberia. The material is restricted to

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the area of Lake Baykal, the Khatanga depression, the Turukhansk district, the Minusinsk basin, the West Siberian plains, Tuva and Severnaya Zemlya. The following scientists are mentioned as having made important contributions in this field of exploration and research: the geologists Arkhangel'skiy, A. D., Gubkin, I. M., Shatskiy, N. S., Tolmachev, I. P., Smirnov, L. P., Senyukov, V. M., and Vologdin, A. G., Fedorov, S. F., Chepikov, K. R., Glebovskaya, Ye. A., Kapelyushnikov, M. A., Zaks, S. L., Stadnikov, G. L., Uspenskiy, V. A., Shturm, L. D. and Korovin, M. K. The text is accompanied by photographs, numerous tables, and bibliographic references.

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AVAILABLE: Library of Congress

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1-19-59

PUTSILLO, V.G.; MIRONOV, S.I., akademik.

Possible occurrence of oil-producing rocks in the freshwater depressions of the Baikal region. Dokl. AN SSSR 117 no.3:479-482 N '57. (MIRA 11:3)

1. Institut nefti AN SSSR.
(Baikal region--Petroleum geology)

PUTSILLO, Vera Georgiyevna; SOKOLOVA, Mariya Nikolayevna; MIRONOV, Stepan Il'ich, akademik, otvetstvennyy red.; SHOBOLOV, S.P., red. izd-va; KASHINA, P.S., tekhn. red.

[Petroleum and bitumen in Siberia] Nefti i bitumy Sibiri. Moskva, Izd-vo Akad. nauk SSSR, 1958. 245 p. (MIRA 11:7)
(Siberia--Bitumen) (Siberia--Petroleum)

PUTSILLO, V. P.

report to be presented at the 1st Intl Congress of the Intl Federation of Automatic Control, 25 Jun-5 Jul 1960, Moscow, USSR.

LERNER, A. Ya.,- "The application of a self-adjusting system of automatic control"
MALOV, V. S., PESHKICHNIKOV, A. M., and [redacted] A. - "Industrial telemeasurement systems and digital technique"
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NEYMARK, Yu. I. - "Concerning the relation of systems of automatic regulation with the parameters of periodic movements"
NIKOLAYEV, N. S., and EPSHTEYN, V. L. - "System of automatic control of cutting of rolled metal on a continuous bar mill with the use of digital calculating machines"
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PUTSILLO, V. P., PETROV, V. V., KOSHKOV, R. V., and VOLODIN, E. E. - "Principles of construction of a single class of extra control systems for automating production processes"
ROGINSKIY, V. N. - "The development of the theory of relay devices in the USSR"
ROZENBLAT, M.A. - "Dynamic characteristics of cores with right angle hystereses winding and their influence on magnetic boosters"
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VENIKOV, V. A. - "Interactions of a mathematical modeling and calculating technology experiment in calculating loads in electrical systems"

PUTSKHVEROVA A. G.

*Clinical features and diagnosis of paralysis of the facial nerve in acute poliomyelitis (Russian text) PEDIATRIYA 1953, 4 (49-54)

Out of 287 cases of various forms of poliomyelitis, facial paralysis was seen in 44, isolated paralysis occurred in 21, in 5 cases combined with paralysis of other cranial nerves and in 18 with paralysis of spinal nerves. In one case the paralysis was bilateral. In 4 cases restitution to normal occurred quickly, in the rest in 1.5-5 months. In 14 cases the meningeal symptoms were marked; in 34 cases lumbar punctures were performed, with normal findings in 8 cases and more or less pathological in the rest. In all cases an otogenic, rheumatic or influenzal origin could be excluded, and these factors seem to be unimportant in childhood. The majority of cases were successfully treated with injections of maternal blood, measles convalescent serum, large doses of aneurin and ascorbic acid, diathermy, faradism, iontophoresis with calcium chloride and more recently with dibazol.

Najman - Rijeka (XX, 7, 8)

SO: Excerpta Medica; Section VIII Vol. 7 No. 11.

PUTSKOV, A.F.

"Lyotropic activity of ions on polar polymers," a paper presented at the 9th Congress on the Chemistry and Physics of High Polymers, 28 Jan-2 Feb 57, Moscow, Research Inst. Phsyical Chemistry.

B-3,084,395

ALEKSASHIN, N.; PUTSKOV, F.

Automobile and motorcycle club came to life. Za rul. 16 no. 5:6-7 My '58. (MIRA 11:7)

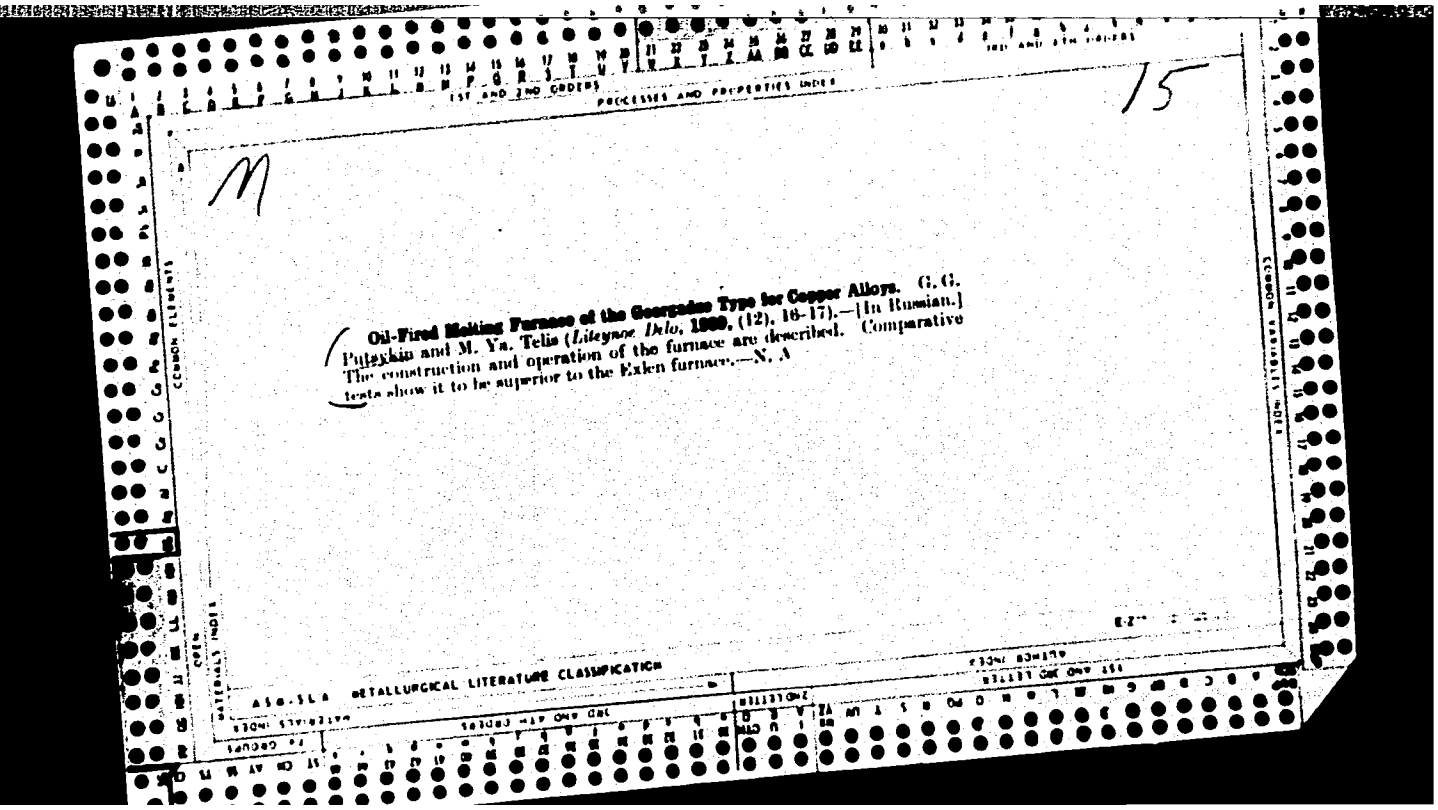
1. Predsedatel' oblastnogo komiteta Dobrovol'nogo obshchestva sodeystviya armii, aviatsii i flotu Surkhan-Dar'inskaya oblast', Uzbekskoy SSR(for Aleksashin). 2. Nachal'nik avtomotokluba Dobrovol'nogo obshchestva sodeystviya armii, aviatsii i flotu, Surkhan-Dar'inskaya oblast', Uzbekskoy SSR(for Putskov).
(Uzbekistan--Automobiles--Societies,etc.)
(Uzbekistan--Motorcycles--Societies,etc.)

PUTSYATIN, G. G., Engineer

"Investigation of the Process of Die Casting on Machines with a Cold Pressing Chamber." Sub 25 Jun 51, Moscow Inst of Nonferrous Metals and Gold imeni M. I. Kalinin

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55



Oil-Fired Melting Furnace of the Georgadze Type for Copper Alloys. G. G. Putyakin and M. Ya. Telis (*Liteynoe Delo*, 1959, (12), 16–17).—[In Russian.] The construction and operation of the furnace are described. Comparative tests show it to be superior to the Eden furnace.—N. A

ZAKHAROV, M.V.; PUTSYKIN, G.G.; STEPANOVA, M.V.; TIKHONOV, B.S.; VORONTSOVA, L.A.

High strength copper conductor alloys. Issl. splav. tsvet. met. no.4:239-244 '63. (MIRA 16:8)

(Copper alloys--Electric properties)

34155

S/196/62/000/002/001/023
E194/E155

9,2165 (1001, 1331, 1482)

AUTHORS: Putsykin, G.G., and Vorontsova, L.A.

TITLE: The properties of bimetallic copper-steel and copper-aluminium conductors

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.2, 1962, 4, abstract 2B 13. (Vestnik elektroprom-sti, no.8, 1961, 8-11).

TEXT: Promising substitutes for copper are conducting bimetallic sheets of aluminium or low-carbon steel copper-clad on one or both sides by rolling, during which process the copper is bonded to the aluminium or the steel over the whole surface of contact by the formation of a diffusion layer. Bimetallic conductors are sometimes even superior to copper. Studies were made of copper-steel and copper-aluminium conductors from 0.5 to 5 mm thick, coated on one and on two sides. The bonding is secure and withstands bending and other kinds of deformation. The specific resistance of the Cu-Al conductor with a 40% Cu layer is 0.024-0.26 ohms.mm^2/m, whilst that of Cu-steel with 5% Cu is 0.12 ohms.mm^2/m. The mechanical properties of the

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The properties of bimetallic ...

Cu-Al material with a copper thickness of 40% and a sheet thickness between 0.5 and 3 mm are as follows: ultimate strength 23 - 18 kg/mm^2; relative elongation 7 - 18%. The mechanical properties of copper-steel with a copper thickness of 5 - 20% and sheet thickness from 1 to 5 mm are: yield point 35 - 21 kg/mm^2; ultimate strength 41 - 27 kg/mm^2; relative elongation 20 - 45%. Pressing and bending tests showed that both materials are of excellent ductility. Electrical and mechanical test results for the material are given.

[Abstractor's note: Complete translation.]

Card 2/2

PALASTIN, L.M., kand.tekhn.nauk; PUTSYKIN, G.G., kand.tekhn.nauk; CHERNOKOV, A.I., inzh.; PANFEROV, Yu.B., inzh.

Regulated d.c. machines with excitation by permanent magnets. Vest. elektroprom. 31 no.12:42-48 D '60. (MIRA 14:2)
(Electric machinery—Direct current)

PUTSYKIN, G.G., kand.tekhn.nauk; VORONTSOVA, L.A., inzh.

Properties of copper-steel and copper-aluminum semiconductors from bimetallic materials. Vest.elektroprom. 32 no.8:8-11 Ag '61. (MIRA 14:8)

(Semiconductors)

88173

16.9500 (1024, 1031, 1132)

S/110/60/000/012/002/004
E194/E455

AUTHORS Palastin, L.M., Candidate of Technical Sciences,
[redacted], G.G., Candidate of Technical Sciences,
Chesnokov, A.I., Engineer and Panferov, Yu.B., Engineer

TITLE Controlled-Output D.C. Machines With Permanent-Magnet Field Systems

PERIODICAL: Vestnik elektropromyshlennosti, 1960, No 12, pp 42-48

TEXT Ordinary d.c. machines with permanent-magnet fields do not permit of direct control of field flux in the air gap. It is accordingly of practical importance to develop a simple and economic design of d.c. machine with permanent-magnet field in which the voltage can be controlled. A way of doing this which has been proposed by the present authors combines two methods of excitation electromagnetic and permanent magnet. The armature, commutator and brush gear are just the same as in an ordinary d.c. machine. Each field pole has two permanent magnet parts and between them is a magnetic shunt of magnetically soft steel. Under normal operating conditions, the machine is excited jointly by the permanent magnet and the compensation winding which surrounds

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Controlled-Output D.C. Machines With Permanent-Magnet Field Systems

the pole as a whole. The permanent-magnet flux passes through the air gap into the armature and is partially shunted, increasing the permanent-magnet leakage flux. Current is passed through the compensating winding in such a direction that its magnetic flux in the air gap coincides in direction with that due to the permanent magnets. Then the flux set up in the shunt by the compensation winding opposes the leakage flux of the permanent magnet which closes through the shunt. Any necessary increase in the working flux is developed by the compensating winding by displacing the leakage flux of the permanent magnet from the shunt into the air gap. In a conventionally excited machine the field winding should be capable of setting up an mmf that will cause all the magnetic flux to pass round the magnetic circuit and will also compensate armature reaction and voltage drop in the armature circuit. By comparison the machines with permanent magnets that are under consideration require much less mmf from the compensation winding. Most of the flux in the air gap is provided by the permanent magnets. If suitably designed, the machine with permanent magnet can have appreciable advantages over an ordinary machine. A number of

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Controlled-Output D.C. Machines With Permanent-Magnet Field Systems

machines are compared in the article, all fulfilling the same requirements and having the same rated data. Results are given for the case of including a compensating winding (the magnetic fluxes of the permanent magnet and the compensating winding coincide in direction in the air gap). The following machines are compared: with conventional excitation; with permanent magnets with orientated crystallization; with magnico permanent magnets; and with permanent magnets of high coercive force. Two frame sizes of d.c. motor are compared, firstly in respect of no-load characteristics. Very similar no-load characteristics can be obtained with and without permanent magnets, but with permanent magnets the field winding power is much reduced. Moreover, in motors with permanent magnets, the rated voltage may be exceeded by 25 to 30%, which cannot be allowed with normal methods of excitation because of saturation of the magnetic circuit. The comparison shows that the alloy with orientated crystallization requires the least field power. The use of permanent magnets with high coercive force in four-pole machines has less to

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Controlled-Output D.C. Machines With Permanent-Magnet Field Systems

recommend it. For self-excitation and starting, a d.c. machine must have a relatively high residual flux and in this respect machines with partial permanent-magnet excitation are much superior to normal machines. Motors of this kind can be started against rated load without special starting windings. It is shown that motors with permanent magnets made of alloys with orientated crystallization and magnico have a starting voltage which is 2.5 to 3.5 times less than in normal machines. Alloys with high coercive force require a higher starting voltage which is 70 to 80% of the corresponding value for normal methods of excitation. D.C. motors operated with speed controllers are often required to be of great reliability because of the high runaway speeds that could result from field failure. Here motors with permanent magnets are particularly reliable because even if the compensation winding fails the excitation is sufficiently maintained. The field winding time-constants of machines with permanent-magnet excitation are much smaller than those of normal machines and, accordingly, transient process time is greatly reduced. In the

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E194/E455

Controlled-Output D.C. Machines With Permanent-Magnet Field Systems

ordinary way alloys of high coercivity cannot be magnetized in the assembled machines. However, in the machines described here this is possible, because the compensating winding is wound directly on the permanent magnets and its full flux passes through the magnets along the axis of magnetization. The permanent magnet can accordingly be magnetized by passing through the coils a high value of direct current for a short time. The risk of de-magnetization by transient currents and short-circuit currents is considered and dismissed because the total flux of the magnet remains constant in such circumstances and the flux is redistributed between the air gap and the magnetic shunt. Commutation is practically the same in machines with permanent magnets and in normal machines. There are 7 figures, 2 tables and 6 references: 5 Soviet and 1 English.

SUBMITTED March 2, 1960

Card 5/5

PUTSYKIN, G.G., kand.tekhn.nauk

Methods for filling rotors. Elektrotekhnika 36 no.1:31-32 Ja '65.
(MIRA 18:3)

83241

S/129/60/000/009/006/009
E193/E483

9,2165

AUTHORS: Zakharov, M.V., Doctor of Technical Sciences, Professor. Putsikin, G.G. and Stepanova, A.V., Candidates of Technical Sciences and Vorontsova, L.A., Engineer

TITLE: High Conductivity, Heat-Resistant Copper-Base Alloys

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, 1960, No.9, pp.25-29

TEXT: The object of the present investigation was to develop a copper-base alloy with electrical conductivity no lower than 90 to 95% of that of pure copper, yield point no less than 15 kg/mm^2 and elongation no less than 20 to 30%, the additional requirement being that the alloy should retain these properties after prolonged heating at 170 to 200°C. To this end, Cu-Ag, Cu-Cr, Cu-Zr, Cu-Cr-Cd and Cu-Cr-Zr alloys with various contents of the alloying additions, were examined. It was concluded that binary alloys containing 0.12% Cr or 0.2% Zr, and ternary alloys with 0.2% Cr and 0.15% Cd, or 0.15% Cr and 0.10% Zr, are most promising. The room temperature properties of these alloys are as follows: yield point - 16 to 23 kg/mm^2; U.T.S. - 29 to 36 kg/mm^2; elongation - 21 to 24%; conductivity - 88 to 95% of

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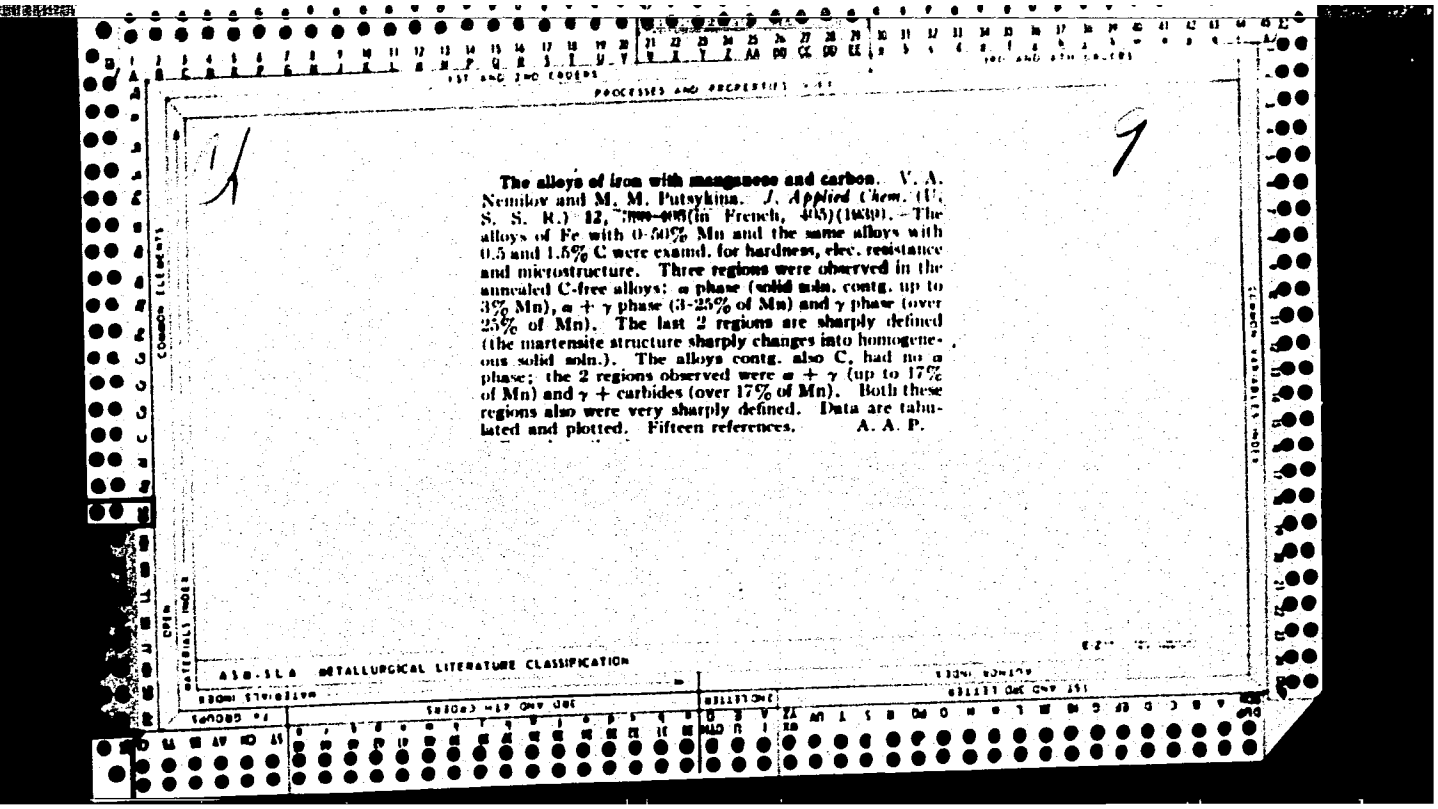
83241

S/129/60/000/009/006/009
E193/E483

High Conductivity, Heat-Resistant Copper-Base Alloys

that of copper grade MO. The alloys retain their properties after 1000 h at 200°C. Even at 220°C, the yield point of these alloys remains at 15 to 18 kg/mm^2, U.T.S. at 22 to 31 kg/mm^2 and elongation at 20 to 29%. It was concluded that the alloy containing 0.15 to 0.3% chromium should be first subjected to large-scale industrial tests, the alloy containing 0.15 to 0.2% Cr and 0.1 to 0.2% Zr being more suitable for critical applications in which the conducting elements operate at 250 to 350°C. There are 2 figures, 4 tables and 7 references: 3 Soviet and 4 English.

Card 2/2



The alloys of iron with manganese and carbon. V. A. Nemilov and M. M. Putsykina. *J. Applied Chem.* (U. S. S. R.) 12, [illegible] (in French, 435)(1939).—The alloys of Fe with 0-50% Mn and the same alloys with 0.5 and 1.5% C were examd. for hardness, elec. resistance and microstructure. Three regions were observed in the annealed C-free alloys: α phase (solid soln. contg. up to 3% Mn), $\alpha + \gamma$ phase (3-25% of Mn) and γ phase (over 25% of Mn). The last 2 regions are sharply defined (the martensite structure sharply changes into homogeneous solid soln.). The alloys contg. also C, had no α phase; the 2 regions observed were $\alpha + \gamma$ (up to 17% of Mn) and γ + carbides (over 17% of Mn). Both these regions also were very sharply defined. Data are tabulated and plotted. Fifteen references. A. A. P.

MP

Properties of Alloys

1942

•**Alloys of Iron with Manganese and Carbon.** [illegible] Senior and M. Putsykina (*Zhur. Prikhl. Khimii (J. Applied Chem.)*, 1939, 12, (3), 395–[illegible].—[In Russian.] Alloys of iron with up to 50% manganese and up to 1·5% carbon were investigated by hardness tests, micro-examination, and measurements of electrical resistance and its temperature coeff. (25°–100° C.). Both "as-cast" and annealed specimens were used. In the annealed iron-manganese alloys, the α region extends to about 3% manganese and is followed by the (α + γ) region up to 25% manganese, beyond which the homogeneous γ-solution region exists. The transition from the (α + γ) to the γ phase-region is clearly indicated by the drop in hardness towards 25% manganese and the subsequent fairly constant hardness, and by the disappearance of the martensitic structure which is replaced by the homogeneous solid solution structure at 25% manganese. In the carbon-containing alloys there was no homogeneous α phase, the alloys consisting either of (α + γ) or, with higher manganese contents, of (α + γ + carbides). The transition between these two regions is situated at a lower manganese content (17%) as compared with the carbon-free alloys.—A. B.

PUTSYKIN, G.G., kand.tekhn.nauk; VORONTSOVA, L.A., inzh.

Conductive aluminum alloys. Elektrotekhnika 36 no.1:36-37 Ja '65.
(MIRA 18:3)

L [illegible]37-67 EWT(1)/EWT(m)/EWP(t)/ETI IJP(c) JD/WW/HW/JG

ACC NR: AP6021057 (A, N) SOURCE CODE: UR/0292/66/000/003/0021/0023

AUTHOR: Zakharov, M. V. (Doctor of technical sciences); Putsykin, G. G. (Candidate of technical sciences); Stepanova, M. V. (Candidate of technical sciences); Vorontsova, L. A. (Engineer)

ORG: none

TITLE: Alloys for electric-machine commutators

SOURCE: Elektrotekhnika, no. 3, 1966, 21-23

TOPIC TAGS: electric machine, electric machine commutator, copper alloy

ABSTRACT: The results are reported of an experimental investigation of high-conductivity low-alloy coppers: Cu-Ni-Be, Cu-Ni-Ti, Cu-Cr-Zr, Cu-Cr-Mg, Cu-Cr-Be, Cu-Cr-Ti, Cu-Co-Be, Cu-Cr-Al, Cu-Cr-Cd, Cu-Fe; for control purposes, copper M1, a copper-magnesium alloy, and Cu-Zr and Cu-Cr bronzes

UDC: 669.35.001.5

Card 1/2

L 09937-67

ACC NR: AP6021057

were also tested. The alloys were subjected to two treatments: (1) Water-quench hardening at 960—980C and tempering at 470—480C for 5 hrs; (2) The same hardening, then 50% workhardening, and then tempering at 470—480C for 4 hrs. Experimental curves and tabulated data show that: By their hardness, wear resistance, heat resistance, and electric conductivity, the following alloys can be recommended for the commutators of electrical machinery operating at 350—500C: a chrome-zirconium bronze containing 0.25—0.5% Cr and 0.15—0.35% Zr (or its cheaper substitute, chrome-magnesium bronze) and a nickel-beryllium bronze containing 0.8—1.1% Ni and 0.15—0.25% Be. The second thermal treatment is recommended for these bronzes. Orig. art. has: 1 figure and 2 tables.

SUB CODE: 10, 11, 09 / SUBM DATE: none / ORIG REF: 004 / OTH REF: 005

FUTSYKINA, I. M.
V. A. NAZ[illegible]LOV, Izvest. Sekt Platiny, 1947, (20), 176-224

PUTSYKINA, M.M.,
NEMILOV, V.A., Izvest. Sektora Platiny i Drug. Blagorod. Metal., Inst. Obshchei i Neorg. Khim, Akad. Nauk No. 20, 176-224 (1947)

28(3) S/028/60/000/02/009/024
D041/D002

AUTHOR: Putsyn, D.P.

TITLE: Normalized Reinforced Concrete Elements of Assembly Equipment

PERIODICAL: Standartizatsiya, 1960, Nr 2, pp 27-29 (USSR)

ABSTRACT: Illustrated information is given on a "normal" standard developed by NII tekhnologii i organizatsiii proizvodstva (Scientific Research Institute of Technology and Organization of Production) for reinforced concrete elements to replace the metal frames used up to now for large industrial structures. Some works are already using the new elements. Description of the elements is given: column blocks (Figure 1,2) reinforced by one or two rows of vertical 6 mm steel rods and horizontally laid 3 mm wire; plates, beams and bases. Information is included in the connection of the elements. The cost per one cubic meter of the new

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S/028/60/000/02/C09/ 024
D041/D002

Normalized Reinforced Concrete Elements of Assembly Equipment

structure blocks is 551 rubles, as compared with 3250 rubles for 1 ton of cast metal used. Cement of "200" grade is used for column and base blocks. There are 5 diagrams and 1 drawing.

Card 2/2

ACC NR: AP6029981 (A; N) SOURCE CODE: UR/0413/66/000/015/0193/0193

AUTHOR: Putsyn, D. P.; Gusev, A. I.; Filatov, G. V.; Dartau, A. N.; Mazayev, A. N.; Novak, G. A.; Yelagin, P. Ya.; Khvatov, A. I.; Dyukov, A. I.; Khropik, B. A.

ORG: none

TITLE: A shop for assemblying large structures of flying machines. Class 62, No. 184138

SOURCE: Izobret prom obraz tov zn, no. 15, 1966, 193

TOPIC TAGS: construction machinery, aircraft

ABSTRACT: This Author Certificate presents a shop for assemblying large structures of flying machines. The shop contains columns sunk into the foundations, horizontal beams fixed on top of the columns, cups with fixing devices, and clevices holding receptors and wedges. To shorten the assembly time and to rearrange the shop repeatedly, bearing plates are fixed to the columns, beams, and cups. These plates have a network of coordinating holes which receive pins connecting the plates to one another. The fixing devices of the cups are tied to the coordinating holes in the spacing strip placed in an aperture in the beam. The bottom of this

UDC: 629.13.01/06

Card 1/2

L 09262-67
ACC NR: AP6029981 0

aperture also contains coordinating holes for fixing the separating strip to the plate of the horizontal beam.

SUB CODE: 01/ 13/ SUBM DATE: 01Mar65

PUTSYNSKIY, I. N.

Cand Tech Sci - (diss) "Problems of correction of frequency and transient characteristics of television amplifiers using semiconductor triodes." Tomsk, 1961. 14 pp; (Ministry of Higher and Secondary Specialist Education RSFSR, Tomsk Order of Labor Red Banner Polytechnic Inst imeni S. M. Kirov); 150 copies; price not given; (KL, 6-61 sup, 224)

PUTUIRSKII, I. A.
YU. P. BIRYUKOV, Russ. 20,253, June 24, 1931

L 16094-66 EWT(d)/EWT(m)/EWP(v)/T/EWP(t)/EWP(k)/EWP(h)/EWP(l) JD/HW/DJ

ACC NR: AT5022782 SOURCE CODE: UR/3164/64/000/014/0040/0043

AUTHOR: Chuyko, P. I. (Engr.); Savin, G. A. (Engr.); Kolesnikov, V. N. (Engr.); Putyatina, Z. V. (Engr.); Isayev, I. N. (Engr.)

57
53
B+1

ORG: none

TITLE: Production of size 40 x 2.0 and 40 x 1.5 mm pipes from stainless steel by cold drawing with a long mandrel

SOURCE: Dnepropetrovsk. Vsesoyuznyy nauchno-issledovatel'skiy i konstruktorsko-tekhnologicheskiy institut trubnoy promyshlennosti. Proizvodstvo trub, no. 14, 1964. Sbornik statey po teorii i praktike trubnogo proizvodstva (Collection of articles on the theory and practice of pipe production), 40-43

TOPIC TAGS: metal tube, cold working, metal drawing, stainless steel, lubrication

ABSTRACT: The experiments were conducted using a 30 t long-drawing tube-mill, equipped with a rolling mill with slanting rollers. Copper and oxalates were tested as lubricants for coating. Following the coppering and oxalating, the pipes were lubricated at temperatures of 50°C with a 6% solution of hard soap, and the outside surface was covered with castor oil and talc (proportion 8:2). The

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L 16094-66

ACC NR: AT5022782

44,55

4

experiments confirmed the possibility of obtaining stainless steel thin-walled pipes by cold drawing with a long mandrel and with a subsequent calibration by drawing without a mandrel. They also showed the possibility of producing pipes without an intermediate heat treatment. Orig. art. has: 1 figure and 1 table.

SUB CODE: 11, 13 SUBM DATE: none/ ORIG REF: 003

Card 2/2 SYN

DAVID, Ioan, ing.; SABO, Elena, ing.; PUVAK, I.; IVASCU, I.; MORARIU, Mircea, ing.

Reserves of reduction of the consumption of construction materials. Probleme econ 18 no.1:165-167 Ja '65.

1. Director General, Tirnaveni Chemical Trust (for David). 2. Head of the Service of Technical Quality Control (for Sabo). 3. Director, "Grivita" Metallurgic Plant, Bucharest (for Puvak). 4. Chief Engineer, "Grivita" Metallurgic Plant, Bucharest (for Ivascu). 5. Director, Directorate of Systematization, Architecture, and Construction Projects, Brasov region People's Council (for Morariu).

PUTYINSKAYA, T.N.; DYMCHENKO, N.M.; STANOMBTSEV, A.M.

Melting point of monomethylamine chloride. Zhur. prikl. khim. 37 no.12:2764-2766 D '64. (MIRA 18:3)

1. Gosudarstvennyy institut prikladnoy khimii.

KIBISOVA, T.G.; PUTVINSKAYA, T.N.

Determination of rhenium in materials containing niobium carbide or zirconium carbide. Zhur. anal. khim. 19 no.12:1482-1485 '64
(MIRA 18:1)

1. State Institute of Applied Chemistry, Leningrad.

SOV/123-59-21-87350

Translation from: Referativnyy zhurnal. Mashinostroyeniye, 1959, Nr 21, p 32 (USSR)

AUTHOR: Putvinskaya, Ye.I.

TITLE: On the Problem of Contact Between Elastic Hollow Cylinders and Elastic Planes

PERIODICAL: Tr. Kazansk. aviats. in-ta, 1958, Vol 43, pp 61 - 76

ABSTRACT: The article has not been reviewed.

Card 1/1